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09/856,553	05/23/2001	Tadashi Yonezaki	L9289.01141	9800

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EXAMINER	
LERNER, MARTIN	
ART UNIT	**PAPER NUMBER**
2654	

DATE MAILED: 08/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/856,553	YONEZAKI, TADASHI	
	Examiner	Art Unit	
	Martin Lerner	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 to 13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 to 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 May 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/23/01 & 5/24/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

Speech Coder with Noise Detection, Modeling, and Quantization.

3. The abstract of the disclosure is objected to because it is more than 150 words. Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities:

On page 7, line 6, "Tolerance range determinator 201" should be –Tolerance range determinator 401—. See Figure 5.

On page 9, lines 18 to 24, "Codebook 602" should be –Codebook 603— and "Quantizer 603" should be –Quantizer 602—. See Figure 7.

Appropriate correction is required.

Claim Objections

5. Claims 4 and 8 are objected to because of the following informalities:

There is no antecedent basis for "the error value". Appropriate correction is required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1 to 3, 5 to 7, and 9 to 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Herre et al.* in view of *Su et al.*

Regarding independent claims 1, 5, and 9 to 13, *Herre et al.* discloses an audio coder and audio coding method, comprising:

"noise section detecting means for detecting the noise section of an input signal" – in detecting step 14, it is detected whether a group of spectral values is a noisy group

or a non-noisy group (column 8, lines 39 to 40: Figure 1: Step 14); a time-domain audio signal is transformed, grouped, and a noisy/non-noisy detection is performed (column 8, lines 55 to 59: Figure 2: Step 20);

"noise level estimating means for estimating the magnitude of noise in the detecting noise section" – then the energy of a noisy group is calculated (column 8, lines 59 to 62: Figure 2: Step 22);

"information source model storing means for storing an information source model that models a parameter string for a [speech] input signal without noise" – a code book from a plurality of code books for a redundancy coding of the non-noisy group is allocated, the code book allocated to the group being referred to by means of a code book number (column 8, lines 42 to 48: Figure 1); a code book is "an information source model" for modeling a string of audio source parameters;

"[speech] analyzing means for analyzing the input signal and extracting parameters" – a time-domain audio signal is converted into a frequency domain signal to obtain spectral values using a time-frequency transforming step 10; the spectral values are grouped together by means of a grouping step 12 to form groups of spectral values (column 8, lines 30 to 38: Figure 1: Steps 10 and 12);

"parameter quantizing means for quantizing said extracted parameters based on said information source model and magnitude of said noise and outputting a code corresponding to the quantized value" – in block 28, a non-noisy group is quantized and redundancy coded; main information of the bit stream includes the quantized and redundancy coded non-noisy groups obtained from block 28, and, as side information

for noisy groups, the measure of the energy of the spectral values ("magnitude of said noise") from block 24 and the additional code book number for signaling the noisy groups from block 26 (column 8, line 62 to column 9, line 8: Figure 2: Steps 26 and 28); code books are "information source models".

Regarding independent claims 1, 5, and 9 to 13, *Herre et al.* discloses an audio coder and audio coding method, but does not expressly disclose application to a speech coder and speech coding method. However, it is well known that speech is a particular type of audio, and one skilled in the art would expect that coding of noisy and non-noisy audio signals for MPEG-1 and MPEG-2, as disclosed by *Herre et al.*, would be applicable to coding of noisy and non-noisy speech signals because the coding method depends upon noise and is transparent as to an audio signal being speech or music. Specifically, *Su et al.* teaches a conventional speech coder operating under analogous art principles with codebooks (column 7, lines 26 to 49) as a source encoder to extract modeling and parameters (column 2, lines 31 to 37) and quantization (column 8, lines 1 to 24: Figure 4). *Su et al.* suggests a speech coder providing advantages of efficient and effective coding of a speech signal without perceptual degradation and permitting operation at reduced transmission bit rates. (Column 3, Lines 43 to 51) It would have been obvious to one having ordinary skill in the art to apply the coder and coding method for coding audio signals of *Herre et al.* to a coder and coding method for coding speech signals as taught by *Su et al.* for the purpose of efficient and effective coding of a speech signal without perceptual degradation at reduced bit rates.

Regarding claims 2 and 6, *Su et al.* teaches quantization by minimizing a weighted distortion measure to find a code vector k_{min} which minimizes an error ε_k such that $\varepsilon_{k\,min} < \varepsilon_k$ for all k to represent the prediction/quantization error. (Column 20, Lines 30 to 41) Thus, the parameter quantizing means determines a tolerance, represented by $\varepsilon_{k\,min} < \varepsilon_k$, and extracts codes, k_{min}, whose errors are equal to or less than the tolerance from an information source model, or code book, so as to minimize the error. *Su et al.* suggests a speech coder providing advantages of efficient and effective coding of a speech signal without perceptual degradation and permitting operation at reduced transmission bit rates. (Column 3, Lines 43 to 51) It would have been obvious to one having ordinary skill in the art to apply the coder and coding method for coding noisy audio signals of *Herre et al.* to a coder and coding method for coding speech signals as taught by *Su et al.* for the purpose of efficient and effective coding of a speech signal without perceptual degradation at reduced bit rates.

Regarding claims 3 and 7, *Su et al.* teaches adaptive weighting coefficients for weighting the correlations of different candidates. (Column 23, Line 64 to Column 24, Line 42) One of two subcodebooks is favored using adaptive weighting applied when comparing criterion value F1 from the first subcodebook to the criterion value F2 from the second subcodebook as a function of P_{NSR}, which is the background noise to speech signal ratio. (Column 32, Line 49 to Column 33, Line 33) In general, a speech signal is coded and quantized by minimizing a perceptually weighted error $e_w(n)$ between a target signal and a local synthesized signal. (Column 37, Lines 15 to 43) Thus, a parameter quantizing means determines a weighting, W_c, on each candidate, or

parameter element, based on a perceptually weighted error between a local synthesized signal, or input parameter, and target signal, or quantized value. *Su et al.* suggests a speech coder providing advantages of efficient and effective coding of a speech signal without perceptual degradation and permitting operation at reduced transmission bit rates. (Column 3, Lines 43 to 51) It would have been obvious to one having ordinary skill in the art to apply the coder and coding method for coding audio signals of *Herre et al.* to a coder and coding method for coding noise signals as taught by *Su et al.* for the purpose of efficient and effective coding of a speech signal without perceptual degradation at reduced bit rates.

8. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Herre et al.* in view of *Su et al.* as applied to claims 1 and 5 above, and further in view of *Oshikiri et al.*

Neither *Herre et al.* nor *Su et al.* suggest parameter quantizing means estimating an appearance probability and quantizing the parameter according to the likelihood of an estimated appearance probability combined with an error value. However, *Oshikiri et al.* suggests appearance probability calculation sections for voiced and unvoiced input speech to determine whether the input speech represents speech or background noise. (Column 4, Lines 23 to 35; Column 17, Line 63 to Column 19, Line 62: Figures 14 to 16) *Oshikiri et al.* discloses an advantage of properly performing background noise/speech classification regardless of the magnitude and characteristics of background noise at a very low bit rate. (Column 3, Lines 8 to 56) It would have been

obvious to one having ordinary skill in the art to estimate an appearance probability of speech and background noise as taught by *Oshikiri et al.* in the audio coder and audio coding method for detecting whether a group is noisy or non-noisy of *Herre et al.* for the purpose of properly classifying an input signal as speech or background noise regardless of the magnitude and characteristics of background noise at a very low bit rate.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure.

Navarro et al., Vilmur et al., and Manjunath et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (703) 308-9064. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (703) 305-9645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ML
8/24/04

Martin Lerner
Examiner
Group Art Unit 2654